

What is claimed is:

1. A thermal barrier coating for a substrate, said coating comprising  
a MCrAlY bond coat;  
an intermediate crack resistant ceramic coating on said bond coat; and  
a vertically cracked top coat of yttria stabilized zirconia on said intermediate coat.
2. A thermal barrier coating as set forth in claim 1 wherein said intermediate coating includes a plurality of pores therein to resistant crack propagation.
3. A thermal barrier coating as set forth in claim 2 where said intermediate coating includes polyester.
4. A thermal barrier coating as set forth in claim 1 wherein said intermediate coating has thickness of from 0.002 to 0.010 inch.
5. A thermal barrier coating as set forth in claim 2 wherein said intermediate coating has a thickness of from 0.004 to 0.006 inch.
6. A thermal barrier coating as set forth in claim 2 wherein bond coat has a thickness of from 0.003 to 0.010 inch, said intermediate coating has thickness of from 0.002 to 0.006 inch and said top coat has a thickness of from 0.005 to 0.045 inch.
7. A thermal barrier coating for a substrate, said coating comprising  
a bond coat made of a material selected from the group consisting of  
MCrAlY and NiCoCrAlY;  
an intermediate crack resistant ceramic coating on said bond coat; and  
a vertically cracked top coat of yttria stabilized zirconia on said intermediate coat.

8. A thermal barrier coating as set forth in claim 7 wherein said bond coat contains a reactive element selected from the group consisting of hafnium and silicon.
9. A coated substrate comprising
  - a substrate;
  - a bond coat on said substrate comprised of one of a high temperature MCrAlY and NiCoCrAlY and having a thickness of from 0.003 to 0.010 inch;
  - an intermediate crack resistant ceramic coating containing yttria stabilized zirconia on said bond coat of a thickness of from 0.002 to 0.006 inch; and
  - a vertically cracked top coat on said bond coat comprised of high temperature yttria stabilized zirconia of a thickness of from 0.005 inches to 0.045 inches.
10. A coated substrate as set forth in claim 9 wherein said substrate is an inner shroud cover plate.
11. A coated substrate as set forth in claim 9 wherein said substrate is one of a turbine rotating blade, turbine bucket, stationary vane and nozzle segment.

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